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MAY 1973

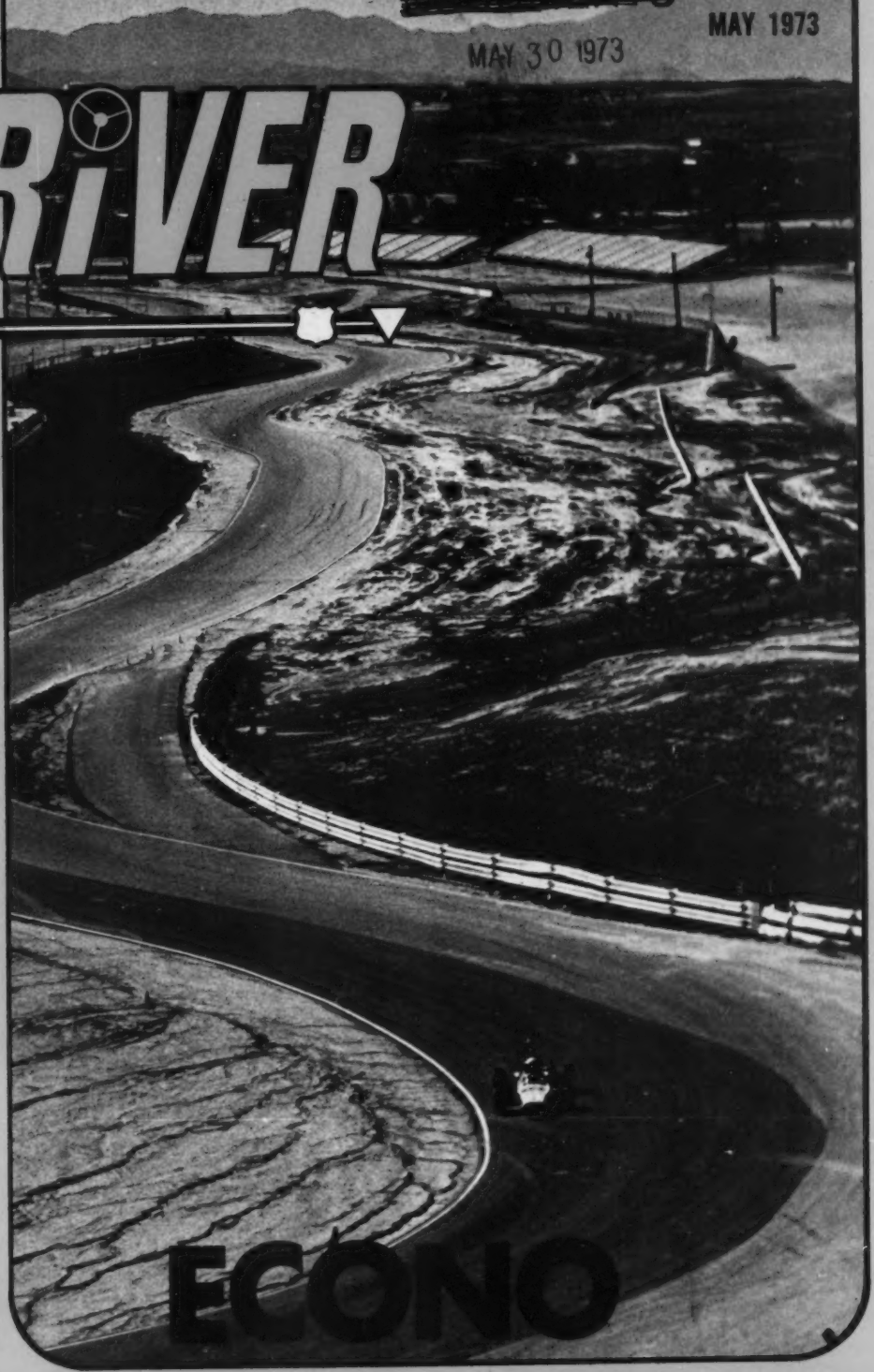
DRIVER

DRIVER DISTRACTIONS

OPINIONS

BACK-YARD MECHANIC

BENCH-RACING WITH SAMMY DUNN

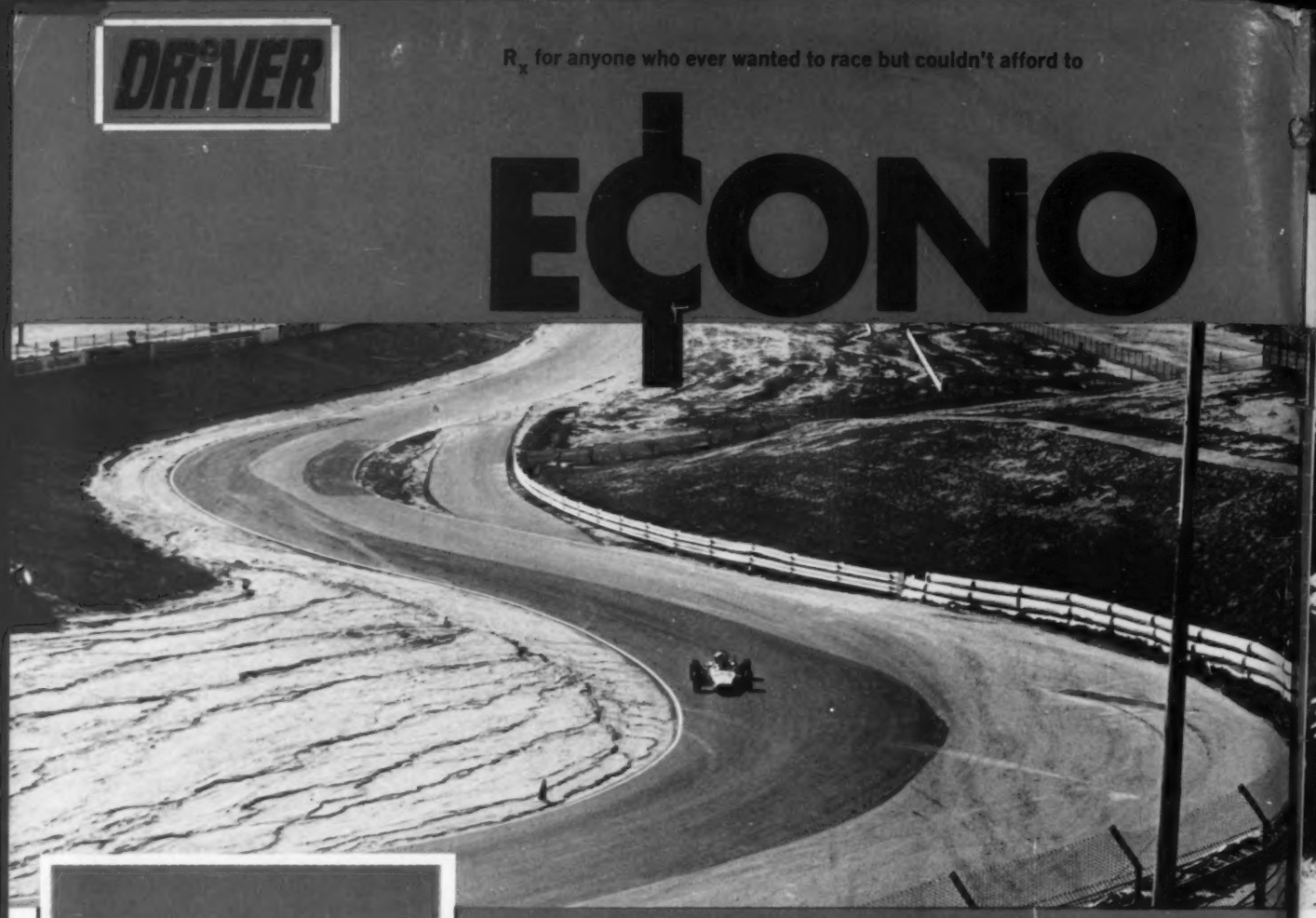


ECONO RACING

DRiVER

R_x for anyone who ever wanted to race but couldn't afford to

ECONO RACING



by 1st Lt LARRY RANDLETT

All cars must go through a detailed technical inspection to insure compliance with safety rules and class specifications.

"I know I could be as good as A. J. Foyt, but who's got the mega-bucks it takes for a first-class race car?"

Sound familiar? If you haven't said it, you've probably thought it. And if you've thought it, we have the solution. No, we can't get you a first-class race car. But we have found a way you can show what you and your car can do at speed, on a major track, without risking your neck—for 20 dollars. It's called " 'Southern California' **Solo I.**"

It all started about 6 or 7 years ago when a group of parking lot slalom enthusiasts decided these events didn't allow cars or drivers to fulfill their potential. As a result, they started running "time trials." These events were run on closed circuits, with very few restrictions on what you could do once you were on the track. It didn't take long for the participants and insuring companies to realize the inherent dangers involved. End of time trials.

But one group of enthusiasts wouldn't give up so easily. They met with the "Cal Club" region of the Sports Car Club of America (SCCA) and the Southern California Council of Sports Car Clubs (SCCSCC) to discuss the future of solo events. The result was a 17-page proposal for a **Solo I** program with SCCA and SCCSCC sanctioning. The program is so well designed that it runs under special supplementary rules of the SCCA. The insurance company was so

At the start of every day there is a drivers' meeting during which safety rules are reemphasized.

Roll bars and fire extinguishers are among the special requirements for all cars—good idea for the street, too!

impressed with the safety designed into the program they made special rates available to Southern California **Solo I.**

WHAT IS SOLO I?

Solo I events are "low-pressure" speed competitions. This means that, unlike wheel-to-wheel racing, the competitor is not pressed beyond his own or his car's limits by other people on the track. **Solo I** is a controlled environment; racing is not. In addition, professional (and some amateur) racers feel such an obligation to car owners, sponsors, and manufacturers that winning becomes a "must." In **Solo I,** winning is nice but not necessary. The fun is in running the course at speed and doing your best with what you have.

Solo I competitions are run against the clock, *not* other racing cars, but they are held on the same tracks the professionals use; Riverside International Raceway, Ontario Motor Speedway, and Willow Springs Race Course. But that doesn't mean you have to own a race car to compete. The cars that participate in **Solo I** range from the completely stock compact to the expensive sports-racing McLarens (see **Solo I** Portfolio). It's a run-what-you-brung affair.

Cars are classed according to their performance potential. As a result, you will find vehicles with large engines but inferior suspensions competing in the same class with better handling, less powerful cars. There are also classes for pure racing cars, and another for those that are "showroom" stock (except for required safety modifications).

Events consist of technical inspections and practice sessions (more about these later); and, finally, timed runs consisting of a specified number of continuous timed laps, the best counting for the competition. It's a 2-day happening. Winners win points rather than trophies, and at the end of the year the leaders in each class receive cash awards.

This form of **Solo I** is becoming as popular among car enthusiasts as disc brakes and four-on-the-floor gearboxes. Already committees from Sports Car Club of America Regions all over the nation are taking a close look at this program for adoption in their areas. While there are other **Solo I** events held around the country, none take

continued

DRIVER

THE TRAFFIC SAFETY MAGAZINE FOR THE MILITARY DRIVER

DEPARTMENT OF THE AIR FORCE

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MAY 1973 VOLUME 6 NUMBER 11

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INCREASED SUBSCRIPTION RATES

Due primarily to increases in postal costs, subscription and single-copy rates for DRIVER magazine have been increased, retroactive to 1 Jan '73 for new subscriptions, renewals, and single copies.*

*See subscription block below for ordering address.

AFRP 127-1

SUBSCRIPTION — DRIVER is available on subscription for $3.50 per year domestic; $1.00 additional for foreign mailing, 35c per copy, through the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Changes in subscription mailings should be sent to the above address. Single copies will be sold and back copies will be furnished when available. Use of funds for printing this publication has been approved by Headquarters, United States Air Force, Department of Defense, Washington, D.C. No payment can be made for manuscripts submitted for publication. Contributors are welcomed, as are comments and criticism. Address all correspondence to the Editor, DRIVER Magazine, AFISC/SEDD, Norton AFB CA 92409. ATTENTION DEPT OF THE NAVY PERSONNEL: Address all queries concerning distribution to NAVSAFECEN, NAS, NORFOLK, VA 23511, Attn: Safety Education Dept. (COAST GUARD and ARMY PERSONNEL should use their own service channels for distribution matters.) All other correspondence will be welcomed by the Editor. The contents of this magazine are informative and should not be construed as regulations, technical orders, or directives unless stated. Address reprint requests, stating intended use of material, to the Editor. The Editor reserves the right to make any editorial changes in manuscripts which he believes will improve the material without altering the intended meaning.

THE EDITOR SPEAKS

DOUBLE CLUTCH

A good friend of DRIVER and its readers retires from the Air Force this month. Brigadier General Robin Olds, triple Ace of WW II and Vietnam, will vacate the post he has held for more

than 2 years as Director of Aerospace Safety.

General Olds has been far more than a "name on the masthead" to DRIVER's staff. He has been an ardent fan and staunch backer, as well as the military equivalent of Publisher and Editor-in-Chief. His driving expertise and dedication to safe-driving practices are well known to many Air Force Academy students and grads. As Academy Commandant, 1967-1971, he initiated the Academy's outstanding driving training program you may have read about in "Good Looking Cars," July 1971 DRIVER.

General Olds has these words to pass on to you:

"DRIVER has more than tripled its circulation during the past 3 years, with the addition of Army, Navy, Marine, and Coast Guard readers. This acknowledgement by our sister services, as well as the favorable comments received here from the readership, tells me a great deal. The young serviceman, his supervisor, and commander obviously appreciate DRIVER and its straightforward approach to promoting reader interest in safe driving.

"Driving is one thing we all share in common. It is an enjoyable process for most of us, yet we often ignore the inherent dangers as we tool comfortably along, feeling safe and secure. But none of us can really afford to do that.

"Keep on reading DRIVER, and remember what you've read: you'll have a better vehicle, a smoother and safer ride, and a longer lease on life.

"Good luck to all of you." ●

Special wheels are allowed but not required. Note how the knock-off is safety-wired to prevent inadvertent release.

Every school has a headmaster. Paul Vollmer is in charge of the very efficient Solo I operation.

During lunch, instructors take students around the course to discuss the proper line through each corner.

Would you believe it? A Vega Kamm-back rolls out onto the track.

All forward lighting fixtures must be taped.

continued
ECONO-RACING

such a professional approach as the Southern California program. But, expect them to start appearing in the other regions soon.

Don't get the idea, though, that this type instruction is just for the pseudo-racer or car nut. It has a lot to offer anyone interested in developing driving skills under the tutelage of some of the world's most skillful drivers. DRIVER discovered there is much to learn, and that there are many skills taught that can be applied to better highway driving.

TELL ME MORE

Before you head off to the nearest **Solo I** to test your skill with the family sedan, there are a few rules.

First, cars must comply with the following safety regulations:

- The technical inspectors must consider the vehicle safe.
- Cars must be equipped with a 3″ webbed seat belt with a metal-to-metal quick-release buckle; 2″, two-strap shoulder harness; 2″ anti-submarine belt.
- All cars must carry a full 2½-lb (minimum) dry chemical fire extinguisher.
- Only bias-belted and designated high-performance tires will be accepted (this includes radials).
- Catch tanks must be provided on main engine breather and radiator overflow.
- Roll bars are required in all cars.
- All front lighting fixtures must be taped.
- No wood or wood-rimmed steering wheels are allowed.

Secondly, drivers must comply with the following requirements:

- No minors (as defined in state law) are allowed to participate. (Sorry!)
- Drivers must conduct themselves in a safe manner.
- You must have fireproof clothing. (Nomex flight suits acceptable.)
- Fire-resistant gloves, socks, and leather shoes are required.
- All drivers will be licensed by satisfactorily completing a **Solo I** driver school.

The equipment required might cost about $150, yet this is still a fraction of the initial cost of most other forms of racing.

SCHOOL DAYS

Southern California **Solo I** driving schools are held twice a year; one in February and one in August. DRIVER recently had the opportunity to attend the school at Riverside International Raceway (RIR), and found it interesting, informative, and fun!

The schoolday starts early in the morning with registration. There are necessary forms to fill out and, of course, the entry fee. The 2-day course costs only $20 for a single, or $25 for mixed couples. As a result of this special pricing, there are many husband-and-wife and girlfriend-and-boyfriend "teams" participating in the sport.

After registering, drivers bring their cars over to the technical inspection area. Here, well trained personnel inspect the cars with one thing in mind; safety. **Solo I** has a fantastic record, and they aren't about to have it blemished by having a car disintegrate in turn nine. The inspectors look for the obvious and not-so-obvious. They check the roll bar for good welds and adequate mountings, the seat belts for frays and improper mounting, the fire extinguisher to make sure it's fully charged, the wheels for loose bearings, the tires for excessive wear, the fuel system for leaks, and even the seat to make sure it doesn't come loose during cornering (oops!).

continued

In the classroom, students learn

how to hold the streering wheel . . . .

continued
ECONO-RACING

Most of the participants told us that these were items they often checked on all their cars. It seems that **Solo I** has taught them that, if they want their cars to remain safe and reliable, they have to inspect them regularly.

At about 0930 the Steward of the Meet, Paul Vollmer, called a mandatory drivers' meeting. The gathering was opened with a warning to all, that certain parts of the track were covered by dirt from recent rains. It was then announced that helmets would be provided to any drivers who did not have their own. Additionally, the drivers were reminded that passing would be restricted to the left, and then only in marked passing zones or when another competitor signalled it was safe to pass. Finally, all participants were again told that close following, dicing,* or racing would not be tolerated.

Not all present were there to attend the school. Many were already licensed **Solo I** drivers who were at Riverside for more track time, testing themselves and their cars. As the drivers' meeting ended, these people prepared for the first practice session while the remainder moved over to the Riverside V.I.P. facilities where the classroom part of the school was conducted.

About 40 very eager students sat in the comfortable executive suite at RIR, waiting for instructor Dan McKeever to begin the course in fast driving.

Dan began, "Many of the things learned at the school this weekend, you will apply to street driving. This doesn't mean that now you will be able to take all the freeway off-ramps as fast as possible because you now know what the apex of a curve is, and how to brake properly and toe-and-heel. But you will find that you feel more secure driving on the street, more aware of what is going on, and more critical of other drivers. All because you know so much more about driving. You'll be able to drive more safely. Just remember, you are here to learn.

"When . . . and if . . . you complete this course, you will receive a license that entitles you to compete in **Solo I** events. This license is a privilege. You must run two events a year to keep it current, and you must always conduct yourself in a safe manner.

"We are not interested in how fast you go; all we care about is that you have the right attitude, develop the skills, and present no hazard to yourself and the other people on the track.

"To be a success, you must concentrate 100% on driving."

The instruction began with the very basics; how to hold the steering wheel and how to get positioned properly in the car. Then the course developed into the more advanced topics; determining the apex of a curve, heel-and-toe, and late braking. The entire classroom phase of instruction lasted about 2 hours, but the real learning would occur out on the track. After the formal instruction was completed, students were assigned to instructors. The assignments were based on the type of car the individual was using. Those instructors (SCCA National license holders) with experience in the faster cars had the students with the faster cars; those with a lot of formula car experience were matched with students with open-wheeled cars, etc.

After assignments, the instructors held meetings with their students to outline some of the points they intended to cover over the 2 days of personal instruction. They itemized exactly what they expected from the student.

Lunchtime means more than just a time to eat and rest. It is a time for instructors to take the students around the course and stop at every turn to discuss the best line and braking point.

Then it is time for the student to go out and practice. The instructors move around the course from turn to turn, observing. As a practice session (30 minutes) ends, the instructor gets together with his students and discusses individual or group problems. If the student is having a problem and would like the instructor to turn a few laps with him, the teachers are very willing. They will show the student what he is doing wrong, or how to set the car for better handling.

And so it goes for 2 days; drivers' meetings, instruction, practice, instruction, and above all, more practice.

IMPRESSIONS

DRIVER is most favorably impressed with Southern California **Solo I.** It is a safe and efficient way to drive fast. Many of the participants confessed to having been "street racers" before **Solo I.** But no more; **Solo I** gives them an opportunity to see what they can do without the inherent risks that exist on public roadways.

We thought the emphasis on concentrating 100% on driving was the most valuable lesson learned that weekend. But there is so much we did learn, there isn't space to print it all.

Solo I people are really enthusiastic about their new program. And we can see why. It is exciting, relatively inexpensive, and fun.

Quite a bargain for 20 bucks.

** Maneuvers made by cars during very close wheel-to-wheel racing in an attempt to pass.*

what the flags mean. . . ,

how to corner . . . , and much, much more!

INSTRUCTOR PROFILE

Name: Bruce Campbell
Occupation: Neuropharmacologist

Background: Bruce is currently co-owner and director of the Riverside International Racing School, a professional driving school at Riverside International Raceway, California. When he's not busy working as a neuropharmacologist, he supervises the practice and testing of race cars.

Bruce is very successful in his own right as a race car driver. He is experienced in CAN-AM Group 7 racing cars (McLaren, Lola, Lotus, Cobra, Geni, etc), formula and production, and prototype cars. With his personal 2-liter Group 3 GT Porsche, Bruce drove to an overall victory in the June International Motor Sport Assn (IMSA) race at Las Vegas. Bruce established a new track record (by 4 seconds) during the race.

He is representative of the high caliber of instructor found at **Solo I** schools.

STUDENT PROFILE

Name: "C.C." Taylor
Occupation: High School Teacher

"I started out slaloming and had so much fun, **Solo I** was a natural progression. I was really scared at the first school I went to; but, as it turned out, I really enjoyed it.

"I've learned a lot, driving out here; especially about the value of safety requirements. They're a real necessity for driving fast, particularly when you go into a turn like number nine where there is no escape route.

"Also, if something goes wrong it's good to know you are protected. I never drive on the street without using the safety items my car is equipped with, like the 3″-wide seat belt.

"The special handling modifications that have been made to my car are also very helpful in making it safe on the road.

"After the first school I went to, I found myself much more aware of the drivers around me. I sort of 'keep tabs' on the location of the traffic around me. Many people will panic in an emergency situation and jam on the brakes, and often this isn't the right answer. Making an evasive maneuver is often the thing to do. **Solo I** teaches you how to think in a driving situation that develops unexpectedly, and how to react properly.

"In **Solo I,** many people use the same car they drive on the street. This helps you to learn the capabilities of both you and your car."

If you want, the instructor will go out on the track with you and determine what you and/or your car are doing wrong.

continued

continued

ECONO-RACING

AN INTERNATIONAL RACING DRIVER LOOKS AT SOLO I

—Dick Guldstrand

"I've been teaching driving for over 12 years. I got started for selfish reasons; it gave me more time on the track when I was first starting to drive. I really enjoy **Solo I.** I like the people involved, and this is a chance for me to help other drivers.

"There is very little difference between what is taught in road racing school and **Solo I** school, except the cost. Ninety percent of the problem is getting the attitude right; what we call 'getting your head on straight.' The first thing a student learns is that, on the track, it is up to the individual as to how fast they go. Once you go out there, you are the commander. There *are* certain rules to follow, but under unexpected circumstances the attitude has to be the same. You have to understand the precarious situation you are in, what ability it takes to handle the situation, and how to judge what will result from your corrective actions.

"There is no doubt that most of the things taught in **Solo I** school are useful on the road. The drivers here relate it directly to what they do on the street; both hands on the wheel, watching what they are doing, concentrating 100% on driving, appreciating lines, handling wet weather, thinking ahead in traffic, and planning moves 'way down the road. This comes naturally after you've participated in **Solo I.**

"To give you an idea how valuable this instruction is, I give similar training to Datsun dealers for Nissan Motors. This company wants their cars to look as good as possible; so they spend a lot of money each year teaching dealers and salesmen how to handle their cars. I go to about 14 tracks around the country every year teaching these people how to stay out of trouble in traffic and how to drive smoothly and safely.

"**Solo I** gives the drivers a chance to find out not only how to drive fast safely and competently, but how to set up their cars. This includes correct tire sizes, pressures, and spring rates, and correcting under- and oversteer. There is so much to learn and become aware of that **Solo I** serves a function previously filled only by much more expensive racing. You can't help but apply the things you learn here on the highway. You are practicing every time you drive, and you're constantly becoming a better driver." ●

SOLO I PORTFOLIO

Morgan +4

Fuel-injected Corvette

289 Cobra

Ford Pinto

Volkswagen 1500

Porsche 906

Mini-Cooper "S"

SOLO I CALENDAR 1973

Jun 2d & 3d	Willow Springs
Aug 11th & 12th	Riverside (school)
Sep 29th & 30th	Riverside
Oct 20th & 21st	Ontario
Nov 24th & 25th	Riverside

What should you DO?

**You're on a two-lane highway
and well into a left curve before
you realize that you've misjudged your speed
and the curve is not banked the way you thought it would be.
You're going too fast to make it, and
you brake and start to skid. What should you do?**

A. Turn in the direction of the skid.

B. Pump brakes to increase rolling friction, and steer down the road.

(See answer on page 27)

1943-1973

30 YEARS OF VIGILANCE

SECURITY POLICE ANNIVERSARY

"... During the recent Vietnam conflict, their actions in defense of our air bases were performed with distinction and valor.

"... The contribution of the Security Police to the success of the Air Force mission is well recognized and appreciated.

"... My congratulations for a job well done and my best wishes for continued success."

General John D. Ryan

Chief of Staff
United States Air Force

29 March 1973

"You wouldn't believe some of the things I've seen in my 20-odd years in the Security Police Force. People do the craziest things.

"Why, at this one base I was at in the desert, we had only one tree on the whole base. There were a lot of bushes, but only one thing that could be called a tree. Well, *the* tree was planted a good 10 feet from the nearest roadway, but that didn't stop our drivers from trying to get it. Every couple of months someone would have one too many at the club; and, sure enough, they'd run smack into that tree. By the time I left, that tree had more scars than a losing boxer. Why people drive when drunk, I'll never know.

"Every once in a while someone does something that's really heartening. Another base I was at had a real problem with young airmen and officers getting arrested by the civilian police for DWI. Well, a group of lieutenants got together and, before they'd go out drinking, they'd draw straws. The guy with the short straw would be restricted to soft drinks, and he'd drive the others home at the end of the evening. Those lieutenants had a lot of fun, but never had a problem, never got a ticket, and never had an accident. Pretty smart if you ask me.

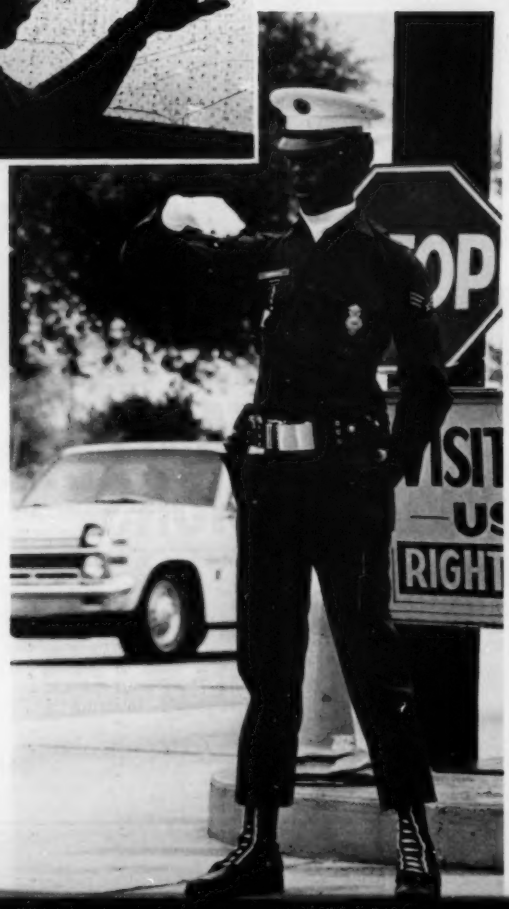
"Yeah, I've seen a lot as an SP, believe me."

◇ ◇ ◇

"I've been a Security Policeman only a couple of years, but I've learned a lot in that time.

"I drive a high-performance car, and being an SP has taught me a lot about driving. One of the biggest scares and best lessons I've ever had occurred about 6 months ago. We got this report of an accident, and when we got to the scene there was a car just like mine . . . only completely crumpled. I mean *totalled*. At first I thought it was mine, and someone had stolen it. My heart beat a thousand times a minute until I saw the license plates and realized it wasn't mine.

"It seems the driver had one too many and lost control. He was thrown through the windshield, and his passenger was thrown out the door and run over by the car. Both of them were killed. Man, you can't get me to go *anywhere* any more without my seat belt fastened." ●



DRIVER magazine would like to take this opportunity to congratulate the Security Police on their 30 years of dedicated service. Necessary jobs are often thankless jobs. DRIVER thanks the Security Police for protecting Air Force lives and Air Force bases.

DRIVER

ARE DEADLY DIVERSIONS

These scenes probably tell a lot about those "unexplained" accidents. You may get away with reading a map, or getting help with the driving from your pooch, but watch out. The odds favoring a disaster really soar.

R DISTRACTIONS

A little annoyance, or distraction, when you are behind the wheel can steer you into a lot of trouble. It can happen to you. . . .

A college student was fumbling for the windshield defroster knob under the dash. As he bent down to look for it, his car went out of control and

continued

crashed into a parked car. . . .

The driver of a U.S. Army truck in Greenland dropped his cigarette on the seat. He took his eyes off the road for a second to search for it and crashed into the rear of the car in front.

LITTLE THINGS—BIG ACCIDENTS

Driver distractions may be little things, but they can trigger big accidents. Some of the more common ones are: leaning across the seat to re-slam the door that didn't shut the first time, looking at an advertisement in a store window, trying to read a wrist watch in the light of the panel, and eyeing a pretty girl on the sidewalk. Most of us have done these things at one time or another, and we are lucky to have gotten away with them; but luck runs out after a while —and then it happens.

Nobody knows how many accidents have been caused by such minor distractions, but just about every driver can recall too-close-for-comfort incidents that resulted from these momentary lapses of attention. They can be fatal.

continued

DRIVER DISTRACTIONS . . . .

DISTRACTING NO-NOs

Safety experts tell us distractions fall into three categories. First, there are those that could be avoided with a little preplanning and preparation:

- Searching for a toll ticket (keep it tucked under the sun visor).
- Trying to dial the radio (most driving is local, and you can preset the stations with the pushbuttons).
- Reaching into the glove compartment (anything you will need before the first stop should be kept handy).
- Handling sunglasses (sunglasses should be readily accessible—and clean).
- Disciplining the kids (on long trips, take books and games . . . on short trips, grin and bear it until you get home, then cut loose).
- Trying to read a map (study the route before you start, and have your "copilot" do the map reading).

The second group of distractions can also be avoided by action *before* the trip. Here are some precautions you can take:

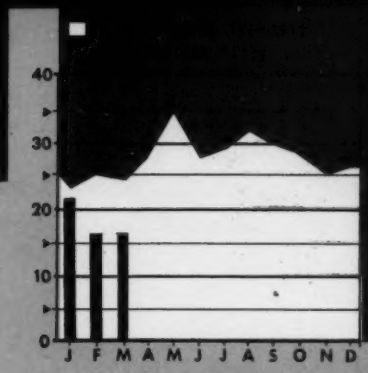
- Check the mirrors.
- Adjust the driver's seat so that all the controls are within easy reach of hand or foot.
- Check the door locks, and buckle up.

The third group includes things that should be done only when the car is stopped, such as:

- Trying to get into or out of a coat, jacket, or sweater.
- Feeling around for something on the floor is deadly, and so is checking up on your appearance in the rearview mirror.
- Eating and drinking while behind the wheel is bad for your health, and so is trying to use your camera with one or both (don't blanch, some people do it!) hands.

Driving is a full-time job requiring your complete attention, because you never know what will happen in front of you, behind you, or to either side. ●

(Adapted from "Minor Distractions Can Trigger Major Crashes," by Tom Dodds, TRAFFIC SAFETY magazine, Dec '72).



A monthly recap of selected accidents—presented solely in the hope some will benefit from the unfortunate experiences of others

HOW GOES IT?

EXCESSIVE SPEED, LACK OF EXPERIENCE

Rank: A1C Type vehicle: 1971 Triumph 650cc motorcycle

The A1C departed his girlfriend's house at 2245 and took too wide an arc in a left-hand curve on the way home. The bike hit a curb, became airborne, and struck a utility pole. The estimated 50- to 60-mph impact was fatal, despite the fact he was wearing an approved helmet.

Probable cause:
Loss of control due to excessive speed at night on a curve.

Probable contributing factor:
Lack of experience; he had owned a bike only a short time before the accident.

ALCOHOL AND FATIGUE

Rank: SSgt Type vehicle: Civ 1968 Plymouth 4-door

After working all day, driving all night, and consuming an undetermined amount of alcohol, the SSgt drove into a ditch at 0515. When he walked onto the road and attempted to flag down a passing car, he was struck and killed.

Probable cause:
Walking on dark road.

Probable contributing factors:
Fatigue and alcohol; a BA test showed .27 alcohol in his blood, which rendered him intoxicated beyond ability to survive in such an environment.

FATAL FLAT

Rank: Sgt/TSgt/Sgt/Sgt Type vehicle: 1968 Chevrolet 1½-ton pickup, camper

A Sgt drove three of his buddies down an Interstate highway, heading for deer country. A left rear flat caused him to pull off onto the side of the road, and two of the Sgts walked to a nearby town to borrow a jack.

At 2200, while the SSgt watched a Sgt loosen the lug nuts on the wheel, and the other two Sgts were under the vehicle positioning the jack, a tractor-trailer rig struck and killed the two noncoms standing on the side of the road. One of the Sgts under the truck looked up and saw the camper rig upending and heading for the ditch, and the other Sgt received a blow on his head from the toppled jack as the tractor struck the camper. The driver/owner of the camper received only first-aid type injuries.

Probable causes:
Parking too close to road at night; no warning lights or flares in use.

FATIGUED AND CONFUSED

Rank: Lt Col Type vehicle: 1966 VW 2-door

The Colonel and his wife were fatally injured at 0137, when their car crossed the centerline of a secondary road and struck a civilian-operated car head-on.

Seat belts and shoulder harnesses were not used.

Probable causes:
Unfamiliarity with British left-hand traffic; poor roadway design might have created an illusion of oncoming cars in the wrong lane.

Probable contributing factor:
Driver fatigue.

INADEQUATE MAINTENANCE

Rank: Sgt Type vehicle: 1966 Plymouth 2-door

The Sgt was ejected from his car and killed when his body broke off a 24-inch diameter tree. His seat belt was not fastened. The car had hit a bump in the passing lane while traveling 55 mph, and continued to bounce. The car left the road and rolled, coming to rest on its top.

Probable cause:
Loss of control at speed too fast for road conditions.

Probable contributing factor:
Lack of timely preventive maintenance; shock replacement might have prevented this fatality.

PASSENGER FATALITY

Rank: SSgt Type vehicle: 1973 Chevrolet 2-door

The SSgt was sleeping in a rear seat, his wife was a passenger in the front seat, and a TSgt's wife was driving.

The driver failed to stop at a four-way stop, and the car crashed into a dump-truck. The three injured occupants were hospitalized, and the SSgt died the next day. Seat belts were worn, but were positioned high and fastened loosely on the victims' bodies.

Cause:
Failure to heed stop sign.

"...Seat belts are the greatest thing since peanut butter...."

"...the utter disregard some drivers show for others bugs me most...."

OPINIONS

"OPINIONS," the reader feedback feature of DRIVER magazine, has resulted in enthusiastic response since kickoff in the Feb '73 issue. Among the letters received were one from an Air Force staff sergeant and one from a Navy petty officer. They were so good we included them in this month's "OPINIONS." Also included are several personal interviews. (The answers to our questions have not been altered in content, only edited for space considerations.) Opinions expressed are those of the individuals questioned, and do not necessarily represent the position of DRIVER.

It seems the seat belt philosophy is not yet universal among our readers. This month we have two men who swear by seat belts, one who wears his when he thinks about it, and a fourth who has reservations about their convenience.

DRiVER
Interviews

Here are the questions:

What bugs you most about other drivers?

What do you think about seat belts?

When you drive, do you ever think about the possibility or consequences of an accident?

What comments do you have about the push to require more safely constructed cars?

Insurance companies charge higher rates for younger drivers in the high-risk age group. What comments do you have on this?

continued

OPINIONS

Sgt Gene Reynolds, U.S. Air Force
Home: San Bernardino, California

(1) Nothing really bugs me. I haven't run into any real nuts on the road—yet. I get rid of tailgaters by pumping my brakes and flashing my stop lights. I have been driving about a year.

(2) Seat belts are a good idea—but inconvenient. When I had my Pontiac I used my seat belts all the time. But now I own a VW bug, and they are too inconvenient to adjust and use, so I don't use them at all anymore.

(3) I think about the possibilities every time I get close to a tight situation. At a time like that, however, I'm too busy getting away from whatever the situation might be to think about the consequences of an accident.

(4) I'll answer that with a question: Are we designing cars to have accidents in? The auto designers do have some good safety ideas, but they are too tightly bound by company financial restrictions to do a worthwhile job. The auto companies are more interested in making money than they are in designing really safe cars, and until the government makes them do it, they aren't going to.

(5) I'm in about the highest risk group you can get, because of my age, limited driving experience, and the fact I'm unmarried. One insurance company has come out with a new deal for Air Force drivers in this group, which offers much lower rates and complete coverage. Also, you don't have to pay the entire premium at once, as you have to do with the other companies. I do feel, however, that the insurance companies are justified in charging this high-risk group higher premiums.

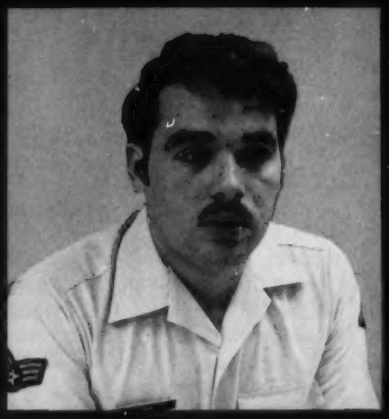
If you have opinions on our questions, why not drop us a line and let us know? We'd like to hear from you. Write to: Editor, DRIVER Magazine, AFISC/SEDD, Norton AFB CA 92409. ●

PO3 Richard Jones, U.S. Navy
Home: Sonoma, California

(1) A woman with a station wagon full of kids who bulldozes her way through traffic as if she had some Divine Right. Also, elderly people who block traffic with their overly cautious driving habits.
(2) Seat belts are the greatest thing since peanut butter! I wouldn't drive without both lap and shoulder belts. They are both inexpensive and very effective in reducing the extent of injuries and the number of fatalities. I would like to see all states pass laws making it mandatory to use lap and shoulder belts. Australia has made the use of belts mandatory, and the traffic death toll Down Under has taken a dramatic drop.

I would also like to see the car manufacturers required to install belt systems that are both convenient and comfortable to use. Then, a lot more people would use them.
(3) I think about possible accidents almost constantly. I have had several minor fender-benders, and am aware of the great cost and inconvenience involved.

I think poor road designing has a lot to do with accidents. Dangerous driving conditions that are built into a road increase everybody's chances of having an accident.
(4) Legislation concerning safer cars is long overdue. Styling has produced many dangerous features on our cars. A car designed to help you survive makes sense. Many cars now have more power than their brakes can handle, and most domestic cars have poor handling characteristics. Better brakes, suspensions, and steering controls are desperately needed, as are better lighting, glare protection, and interior padding. We need more emphasis on cars that can avoid accidents through better visibility and handling. The trend toward cockpit-style designing is good. Having everything within reach of the buckled-up driver is important. The auto companies should pay for these changes, not the consumer.
(5) I think the companies are justified in charging more to those who cause the majority of accidents. It seems to me the rates are excessive, in light of the companies' profits.



Sgt Hermilo Silva, U.S. Air Force
Home: Mercedes, Texas

(1) Mostly it is the unskilled drivers who bug me. They either don't know how to drive or they think they have the right-of-way down the middle of the road. They don't seem to care how they drive, and this makes hazardous driving for everybody. Also, people who drive too slowly, especially on the freeways. They can cause accidents because other drivers want to get past and sometimes take chances. Drivers who follow too closely also bug me.
(2) I like seat belts, but sometimes I forget to use mine. I think they have a definite purpose in saving lives and preventing injuries. I try to remember to use mine.
(3) I think a lot about accidents, especially at night when I am tired. It bothers and scares me so much then that I pull off the road and 'take 10.' I've been driving since 1968, and haven't had a serious accident.
(4) I think the push for safer cars is great; they should be built even more safely. The new bumpers are alright, but they should be made even stronger. After all, 5 mph is only a parking speed, and cars go a lot faster on the road.

Comments: Actually it is not the car that is unsafe, it is the driver. Stricter driver licensing tests and more enforcement of the laws would cut down on a lot of accidents, I think.

SSgt Larry D. Martin, U.S. Air Force
Home: Bellevue, Nebraska

(1) The utter disregard some drivers show for others bugs me most. People who insist on having the right-of-way are "accidents looking for a place to happen."
(2) I am a religious wearer of seat belts. They not only can, but will reduce the number of people killed and the severity of injuries.
(3) You might term me a paranoid when it comes to driving in heavy traffic. For a long time I have practiced accident situations in my head while driving, because I believe you can condition yourself to react quickly in an emergency when there is precious little time to think things through.
(4) I fear many of the efforts made toward designing more safely constructed cars are misdirected. A vehicle that is more like an Army tank than a car is a poor substitute for a car that will brake and handle well in the hands of a person who has been educated in its use. DOT safety experts may point to a car's "humungus" [sic] bumpers and say it is the safer car because it weighs more and will surely survive a crash. Perhaps they are right, but they are missing the most important item . . . the person at the wheel. Safer cars are great, but let's not get the cart before the horse.
(5) Ah . . .insurance . . . the ultimate ripoff. The insurance companies are playing the old numbers game on a generation of people. There is only one fair way to charge people, and that is to make them pay on the basis of their individual driving and accident records.

Comments: It has been said that speed kills. There is no question that speed is a contributing factor, but to put so much emphasis on speed is very shortsighted. Get the drunk and the addict from behind the wheel, and the accident rate will drop by more than half. Educate drivers better. Drivers are the key; we are the drivers.

DRIVER interview One of the First Ladies of Professional Cycle Racing talks riding and racing with DRIVER

BENCH-RACING with

"On a bike there's a great feeling of freedom that is hard to explain."

"I got out on the track and took a couple of practice laps—it felt pretty good. In one corner a guy came sliding in next to me and gave me the OK sign—I figured everything was cool. The next corner . . . two guys put me into the wall.

"I closed my eyes and thought, *'this is it'*—but, I bounced off the wall, did a couple of tank-slappers,* and straightened it out. Everyone, including me, couldn't believe I didn't crash."

A shocking introduction into the demanding world of American Motorcycle Association (AMA) professional flat-track racing—enough to scare most riders. But it didn't scare Sammie Dunn. It's pretty hard to scare somebody who's ridden the rugged "Mexican [Baja] 1,000" (mile) endurance race, and who placed 22 out of 182 starters in Nevada's just-as-rugged "Mint 400"—even if that somebody is a petite, attractive, 26-year-old mother of two. She has also placed as high as fourth in numerous desert races throughout the western U.S.

Sammie (given name—she was supposed to be a boy) got started on bikes 6 years ago when her husband let her ride his "scrambler" in a vacant field. She's been riding ever since.

"On a bike there's a great feeling of freedom that is hard to explain. You're not thinking about taxes, people, or home problems. The feeling is the same, whether racing or just riding," she says.

"But you can't let yourself get TOO free on a bike," she temporized; "you always have to be tuned in to the changing riding conditions."

RACING, HER BAG

Although she loves bikes and all types of riding, competition is the ultimate for this unlikely-looking motorcycle racer. Sammie's been desert racing for several years, and was one of the first women to be granted an AMA professional competition license. She was the first and only woman to ride AMA professional half-mile.

Sammie admits it took a lot of "something" (she's not quite sure what) to break the sex barrier at California's legendary Ascot Park, where she rode her first half-mile race. But she still doesn't know what motivates her to race, other than, "It's just a gas."

"Why does anyone do anything?" she questions. "I could say it's the danger—the hidden gambler in me. But I like living and racing too much to want to die, and I dislike pain as much as anyone. That's why I'm very cautious and concentrate on being as safe as possible on and off the track."

HOURS OF RIDING TIME

Being the first woman to ride professional half-mile didn't come easy. The 100-pound "hot-shoe" did a lot of riding before hooking up her kidney belt, zipping her protective racing leathers, and strapping on her helmet for her first ride on the Ascot half-mile.

"The most important part of riding comes in that first 6 months of owning a bike. You've got to think about more than just absorbing the mechanics of riding. That's relatively easy if you're on the ball. What's hard is understanding and accepting the hazards connected with riding. Most riders know what a bike does for them, but many don't seem aware of what it can do TO them."

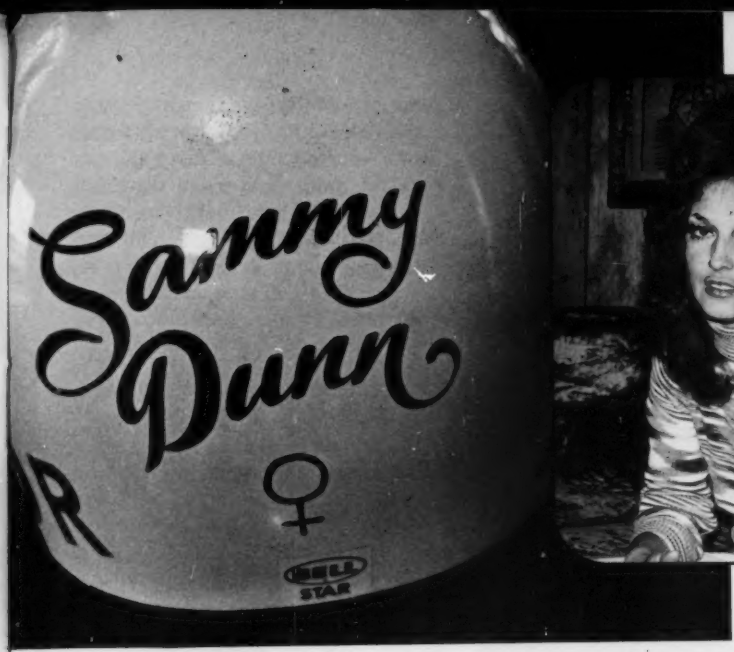
"Sam," as her friends call her, learned to ride by trial-and-error on a big bike, and lost some skin in the process. She admits it wasn't the best way to go, and credits good luck for avoiding serious injury.

"The best way to learn to ride," she advises, "is to attend one of the riding schools, such as those offered by certain cycle manufacturers. Even the most experienced rider can learn a lot from one of these courses. Also, the beginner shouldn't start riding on anything larger than a 175 or 250cc. Build your confidence and capabilities slowly—then move up to a bigger bike if you want.

"When you can handle your bike, go out and ride with someone who's been at the game a long time. You can benefit a lot from someone else's experience. The key to good racing or riding is realizing you must never stop learning.

"Learning to handle a cycle is not an overnight thing. It takes time and caution, especially during those first

**Tank-slapping occurs when the front wheel of a motorcycle goes out of control and wobbles back and forth, banging the handlebars on the gas tank, while the rider tries to regain control.*



Ms Dunn uses both "Sammy" and "Sammie"

"You can't let yourself get TOO free on a bike, you always have to be tuned in to the changing riding conditions."

6 months, a period when many new cyclists really blow it. You have to be constantly aware of your limits, as well as your machine's. These limits increase with riding experience. The greater your limits, the safer you are in all riding situations."

CRASH-AND-BURNS

Although Sammie has never been seriously injured, it's not because she hasn't had some spectacular "crash-and-burns."

"I've gone off cliffs, been hit by cars, and had head-ons with other bikes. I came through all of these because I'm lucky, and because I always protect my bod."

One encounter left a lasting impression on the now-cautious lady racer. "One time in Mexico," she related, "I was chugging along in a ditch after riding a scrambles. A 15-year-old kid, who had gotten drunk and stolen his father's car, ran off the road at 70 mph, right where I happened to be riding.

"Luckily, I was still wearing my helmet and leathers from the race, and regained consciousness in pretty good shape. I learned a very good lesson that day—*now, I never get on a bike without suiting up.*"

WEAR GOOD STUFF

"You've got to wear a kidney belt, helmet, boots, and all the rest when

continued

continued

BENCH-RACING WITH SAMMIE DUNN

riding. A lot of people don't, and I don't believe anyone should be forced to do anything. But wearing or not wearing a helmet is not a matter of freedom, it's a matter of common sense.

"Also I think it's very important to use the best equipment you can lay your hands on. I look at it this way; I've seen guys on the track try to punch holes in wooden fences with their heads at 70 mph, and walk away.

"And, like at Daytona, road-racers get off at well over 100 mph—bounce, roll, and slide a few hundred feet, and get up with only some scrapes and bruises. This happens frequently on the track. But, every day you hear about people getting wiped out on the road when they fall off at 30 mph, or have collisions far less severe than those on the track.

"A lot of these people aren't wearing helmets or any protective gear, but many are. So, there must be a big difference in the quality of the equipment, and whether the helmet fits and is properly fastened."

DOESN'T DIG STREET RIDING

There are only about two sports this lively female racer doesn't go for —pole vaulting and street-riding.

"I don't street-ride any more; it's just not safe. I rode on the street for 2 months one time to break-in a bike, and was run off the pavement four times. On the street you have to be at least three times as careful on a bike as you would be driving a car. Also, you have to remember that the general attitude toward bikes is bad among most car drivers."

PLAY A GAME

Even though she doesn't do any street-riding herself, Sam does have some advice for the road-rider.

"First, always have your headlight glowing, and don't get mad when a driver doesn't see you. Just be expecting it. Also, if the street-rider would use certain road-racing techniques he would be better off. This means analyzing every corner for hazards and setting it up properly before entering.

"On the straight stretches the rider should concentrate on the road and the sound of the bike's engine, just as a racer does. Then, the cyclist would be far more aware of road hazards and cars, and could make the riding time seem to go faster on boring stretches of road while still enjoying the fun of riding."

NO ASSUMPTIONS

One of the more important aspects of riding Sammie stressed to DRIVER is the danger of making assumptions.

"Everyone would like to know they are perfectly safe when they get on their bikes, but it's not that way. For instance, when I go into a corner on the track, I never assume the guy in front of me will keep it on its wheels.

"I always have an appropriate reaction pattern set in my head, so if the guy unloads I can react almost instantly. If he doesn't unload, I'm concentrating that much more intensely on making it myself, so I'm that much better off.

"This system also works well for the road. You don't know if that car is going to stop at the stop sign, so it's foolish to assume it will. Plan on

"We don't take any chances—every nut is safety wired. It's only logical to inspect your bike thoroughly before getting on it."

the driver not stopping—have the reaction pattern set in your head so you can act quickly if he doesn't.

"You can never forget that a bike's at a very distinct disadvantage on the road. You're fighting for survival. A slow-speed crash may mean nothing more than a bent fender for a car, but it could mean a permanently bent head for you."

Sam says riding her first half-mile was as tough as she imagined it would be. But, the half-mile is like other types of riding.

"To ride well," she explained, "you have to be prepared, you have to have complete confidence in your ability, and you must have a secure feeling about your machine."

PERFECT MECHANICAL CONDITION ESSENTIAL

Concerning mechanical matters, Sam said, "I don't really know that much about my racer, so a mechanic checks it to be sure it's perfect before I get on. We don't take any chances—every nut is safety-wired or loctited.*

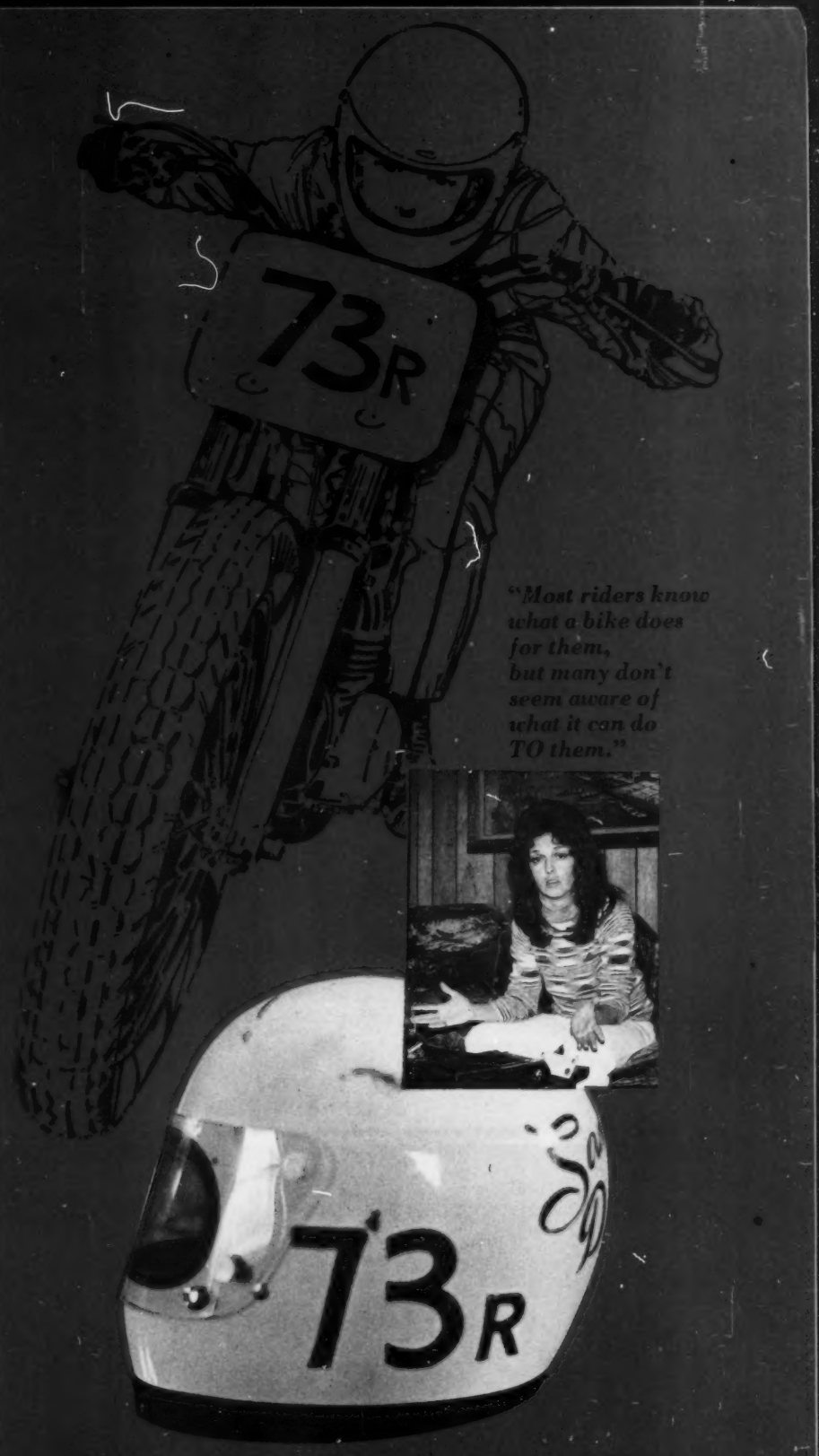
"It's only logical to inspect your bike thoroughly before getting on it, and I would recommend loctiting all nuts and bolts which aren't removed frequently. With all the uncontrollable factors in all types of riding, the cyclist who doesn't have his machinery in perfect condition is out of it.

"This is especially true for a street-rider. You've got too many other things to be concerned with on the road to be wondering if your front wheel is going to fall off. And losing any part on the road can be disastrous."

FUTURE?

Sammie Dunn keeps busy with her two children and her job as a labor relations director, plus her many other interests. Racing is still her bag, and she told DRIVER, "I just want to be the best female racer in the world; that would really dazzle me. Right now, it's half-mile, but I would like to try road-racing. I love getting close to the ground . . . just as long as I don't hit it!" ●

Loctite is one of several products available for sealing nuts and bolts against vibration loosening, and is the name generally used for all such products.



"Most riders know what a bike does for them, but many don't seem aware of what it can do TO them."

"I never get on a bike without suiting up . . . wearing or not wearing a helmet is not a matter of freedom, it's a matter of common sense."

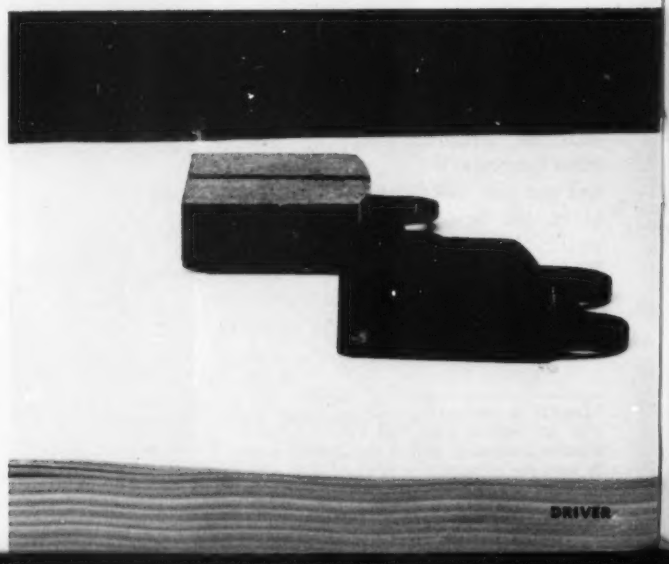
The BACK-YARD MECHANIC PART V

DISC BRAKES creeeee

Disc brakes are super-effective, but super-complicated; the average guy shouldn't mess with them . . . Right? Wrong! This is a popular, but erroneous, misconception among many back-yard mechanics.

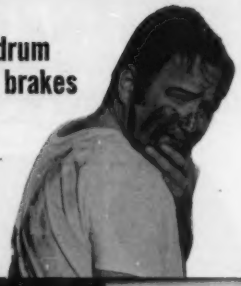
Caliper disc brakes are, in fact, far less complicated and easier to work on than conventional drum brakes. You can replace worn friction pads, the equivalent of "relining" drum brakes, easily at home in less than an hour. This is the most common disc brake maintenance, and can usually be performed with only a few simple tools. And, doing it yourself can save as much as $30.

Discs are now standard on at least the front wheels of many cars, and operate essentially in the same manner as conventional drum brakes. Fluid pressure created by depressing the brake pedal pushes out a set of pistons (either two or four in each caliper). These pistons force a set of brake pads against the wheel assembly rotor, or disc, creating friction to slow the turning wheel (Fig. 1). These friction pads wear, just as drum-brake linings wear, and need periodic replacement. Disc pads generally wear faster than drum linings,



(left)
Pins or bolts, usually in combination with springs, spacers, and washers, hold the pads in the calipers on most disc brakes. Driving or pulling the pins out and removing other retainers frees the pads.

Disc brakes are far more effective than conventional drum brakes, yet less complicated. You can reline your disc brakes easily at home. It just takes a few minutes, and a few common tools. And, if you do it regularly, you'll probably never have to worry about doing any other disc brake maintenance.



and should be checked regularly for excessive decrease in pad thickness.

WHEN TO REPLACE

Measure the pad thickness with a ruler or feeler gage after the first 12,000 miles, and each additional 6,000 miles after that. Some pads must be removed from the caliper to be measured, while others can be checked in place. Always have a new set of pads on hand if you have the type which must be removed for inspection—then you can immediately install the new pads if the old ones are too thin.

Replace the pads when they are worn to less than ⅛-inch thickness, or worn to the minimum thickness specified in your manual. If the pads are allowed to wear past 1/16-inch thickness, expensive caliper and/or disc damage will result. Replacing these inexpensive pads well before they reach their wear-limits is strongly recommended by brake experts for obtaining maximum trouble-free brake life.

LATERAL RUNOUT

While regular pad replacement may prevent the need for any major disc brake work, there are a couple of fairly common problems which can develop. Lateral runout is a condition affecting the disc. Runout is the movement of the disc from side to side (wobble) as it rotates. This condition is usually the reason for noise, chatter, or vibrations during braking. Brake disc replacement is required when there is excessive runout, so be sure to have the discs checked by a mechanic at the first sign of trouble.

PARALLELISM

This situation is simply a variation in the thickness of the disc. It can also result in the need for disc replacement if left unattended. However, you can look for this condition when checking the pads, by measuring the disc thickness at four opposite places. Your manual shows how to control developing parallelism.

STUDY MANUAL

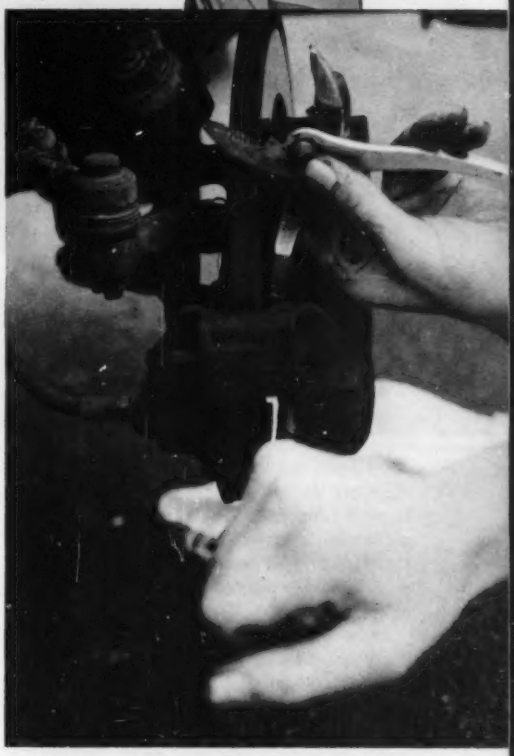
Pad replacement consists basically of the five steps outlined below. Before beginning to work, however, study a manual carefully to familiarize yourself with the procedure given for your brakes. Also, check the manual for recommended installation of other new parts when friction pads are replaced. It's often recommended that parts such as pins, springs, and clips be discarded and new ones installed when changing pads. You should replace any of these parts if they are corroded, bent, or worn, even if replacement is not recommended in the manual.

PAD REPLACEMENT EASY ON ALL BRAKES

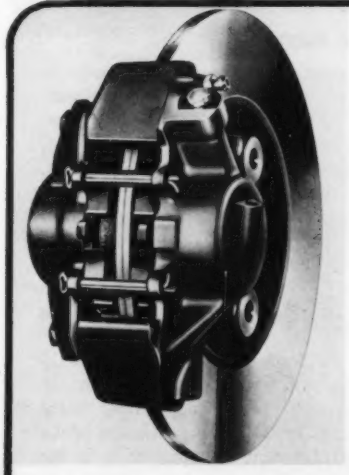
There are three basic disc brake types manufactured by six main companies. Although disc brakes differ somewhat in design, pad replacement is nearly

continued

Fig. 1

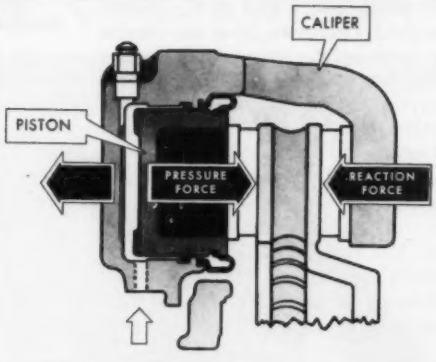


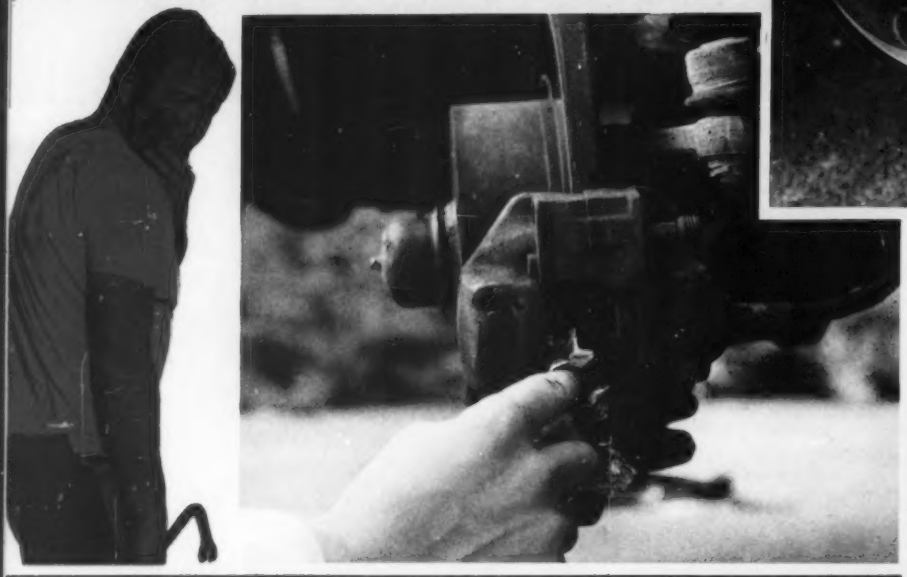
Bottoming the brake system pistons in their bores is necessary to make room to insert the new, thicker brake pads. A special tool is recommended for this job, but it can be done with common tools if you're careful not to damage the piston or disc.



(far left)
Pads are easily pulled from the caliper after removal of the pins and retainers.

(near left)
This pad (front) is not worn all the way to the replacement point, but is badly glazed. Frequent pad replacements are recommended to prevent disc damage from unevenly or excessively worn pads, and to insure maximum brake life and service.





The caliper and disc should be cleaned with denatured alcohol (left) before inserting the new pads exactly as the old ones came out (above).

Retainers and all other parts can be carefully replaced after the pads are properly inserted into the caliper.

identical on all models. The main difference on some models is that the caliper must be lifted from the disc before the pads can be removed; on others, the pads can be pulled directly from the caliper.

Pads can be purchased from most parts houses, and range in price from $10 to more than $30 a set. However, you can often get good-quality pads for about half the usual cost from discount stores or auto parts mail-order houses. Just be sure these pads are certified to be original equipment quality, or meet SAE standards.

GET STARTED

First, procure new pads, other parts to be replaced (as specified in the manual), denatured alcohol (for cleaning brake parts), and a can of the proper brake fluid. Determine from the manual what tools you'll need, and have these handy. A special tool is generally recommended for compressing the pistons into their bores, but it's not necessary. This will be explained later.

Loosen the lug nuts on both front wheels before you raise the front-end. Then set the emergency brake and chock the rear wheels before raising the car's front-end just enough to get the tires off the ground, and support the car with safety stands.* Don't forget to check the stands' locking pins to be sure they are fully extended through the holes.

Remove both front wheels and compare the exploded brake diagram in the manual with the actual brake assembly on your car. Be sure to clearly identify the parts referred to in the pad-change instructions. *Work on only one wheel at a time, so you'll always have a properly assembled brake for reference.*

The next step is to determine if the caliper has to be lifted from the discs before the pads can be removed. If so, follow the removal instructions in your manual, and securely suspend the removed caliper from the car with a piece of safety wire to prevent damage to the unit and brake fluid line.

REMOVE PADS

The retainers that hold the pads in place can now be carefully removed. They may be cotter pins, bolts, clips, or springs. Most cars use a form of pin, often in combination with washers, clips, springs, or spacers. Drive or pull these pins (whichever is required) through the caliper, and remove any other retainers, noting how they fit. Organize the removed parts on a clean surface in the order in which they were removed.

Pull the pads directly out of the caliper. This can usually be done by hand, but a pair of pliers and a little force may be needed. If your particular brake uses two differently shaped pads in the same caliper, note which side each pad came from. If the pads are of the same dimension, it's impossible to install the new ones incorrectly.

CLEANING

Clean the caliper, disc, and entire brake assembly with denatured alcohol, checking as you go for fluid leaks, wear, or other unusual signs. *DO NOT* use anything but alcohol for cleaning brake parts; if petroleum-base fluids get on the disc or friction pad, the brake won't work. Be sure all parts are dry before re-installing.

BOTTOMING THE PISTONS

Before inserting the new pads, the brake system pistons must be forced all the way back into their bores. All disc

**If you usually use ramps for working under your car, you'll have to borrow a set of jack stands . . . or head for the Base Auto Hobby Shop to do this job.*

brakes are self adjusting—as the friction pad wears thinner, the piston comes farther out of its bore to maintain a proper seat between the pad and the disc. Therefore, each piston must be pushed back into its bore to create room to slide the new, thicker pad into the caliper.

Most manufacturers recommend special tools to prevent damaging the brake assembly when bottoming the pistons. However, the pistons have only slight fluid-spring pressure on them, and can be easily forced into their bores with common tools if you're careful.

If the piston fails to move with pressure, however, the caliper must be rebuilt. Caliper rebuilding is generally best left to a good mechanic. Opening the bleed screw will have no effect on a stuck piston, so don't do it unless you want to bleed the system.

Your manual probably suggests simple tools which can be adapted for this job. If not, a large C-clamp positioned around the caliper can be tightened to force the piston into its bore. You should protect the part by placing a block of wood or piece of sponge between the piston and the clamp; or, a screwdriver can usually be used to depress the pistons if you're extra careful.

DRAIN SOME FLUID

Before the pistons can be forced into their bores, however, it is sometimes recommended that some brake fluid be drained from the system. This prevents possible overflow at the master cylinder.

Fluid is drained at the master cylinder, or bled out at the bleeder screw (at the brake assembly). Follow the draining instructions in your manual carefully; if you don't, you may let air into the system . . . and could be in for a real "non-braking" experience.

DO NOT pour the drained fluid back into the system. Refill the reservoir with new fluid of the proper type after you've finished working on both brakes —before driving the car.

INSTALL PADS

Insert the new pads into the caliper exactly as the old ones came out. On most brakes, both pads are identical and cannot be inserted improperly. But on some, especially the four-piston disc brakes used on many larger American cars, the two pads differ. Check the assembled brake against the manual to be sure you have the pads properly inserted.

Reinstall all pins, springs, spacers, and other removed parts, being sure to replace those that need it. Finish reassembling the brake according to specifications, and replace the caliper if it was removed. Double-check the manual and compare the re-assembled brake with the other, to be positive everything is back together correctly.

Tighten any loose bleed screws or brake-line connections, and follow the instructions in the manual for bleeding and closing the system, if required. Pump the brake pedal slowly to reseat the pistons against the pads. Before pumping the brake, however, be sure there is plenty of fluid in the master cylinder reservoir. Air can be pumped into the system if the fluid level has been bled low. Reinstall the wheel assembly and spin it while your wife or buddy operates the brake pedal to be sure the brake operates.

Repeat the pad replacement and check procedures on the other brake assembly. Tighten the lug nuts properly on both wheels when you get the car on the ground. Test-drive the car, being alert for unusual noises and braking patterns—if there are none, you're all set.

OTHER MAINTENANCE

A couple other things you may need to do at the same time you change pads include packing the wheel bearings with grease and inspecting the rear brakes. Packing the front bearings on a disc brake equipped car is fairly involved, and usually requires removing the entire brake assembly. The job won't be covered here, but you can probably do it by following the instructions in your manual. Many people leave this job to experts, and get a complete brake system inspection at the same time.

REAR BRAKES

Most cars using front discs usually have standard drum brakes on the rear. These brakes do not wear as fast as the front brakes, but should also be inspected regularly. Since removing the rear drums may require special wheel pullers, it may be a good idea to have a mechanic check the rear brakes.

Disc brakes, as well as most late-model drum brakes, are self adjusting. However, some import cars, such as VW, have adjustable rear brakes. You can usually finish the job on these cars by pumping the brake pedal to centralize the brake shoes, and inserting a brake adjustment tool or screwdriver into the adjuster holes (generally found on the back sides of the wheels covered with rubber dust plugs). Turn the adjuster nut until the wheel drags slightly when spun by hand. Back off the nut until the wheel turns freely. If more than five adjustment teeth pass before the brake tightens, you're going the wrong way. Your brakes probably have two adjustment nuts per wheel. Adjust the second nut by turning it in the opposite direction. Reinsert the dust plugs. Check your manual for the specifics on your car. ●

(left)
The locking pins are driven back into the caliper, and through the pad locks to finish the job.

A few cars still use adjustable rear brakes with front disc brakes. Adjust these brakes manually to specifications, after both front brakes have been relined, checked out, and road tested.

MORE ON AUTOMOTIVE emission control

Tens of millions of cars on our roads emit excessive pollutants because they are in need of engine tuneups* and/or because emission control installation and maintenance have been neglected.**

According to recent studies, installation of inexpensive conversion kits, plus regular and proper engine tuneups, could reduce pollutants from these cars as much as 50 percent.

OLDER CARS

Conversion kits are now available to convert pre-1968 vehicles for low-pollution operation. One advantage of the kit is that the installation is accompanied by a tuneup as part of the package. Tuneup, alone, does away with a lot of pollution, but even more is eliminated by the conversion kit.

You can have the kit installed, or do it yourself by following the manufacturer's instructions. Also, some expert advice from your hobby shop attendant might help. At present, there are two general types on the aftermarket; one made by General Motors and Ford, the other by Chrysler.

The GM/Ford-type kit installation requires leaning the idle mixture and eliminating the distributor advance in many cases. The GM/Ford instruction sheet calls for increased idle speed, leaner idle mixture, and retarded ignition timing. A thermo-vacuum switch is connected into the hose at the top of the radiator tank. It permits vacuum advance in case the engine begins to overheat. During normal operation, it blocks off the vacuum line between the carburetor and the ignition distributor. With vacuum advance permitted, engine temperature begins to fall; as heat is reduced, the plunger inside the switch returns to its normal position and vacuum advance is eliminated.

In the Chrysler system, vacuum advance is permitted during normal cruising. But, during light acceleration when exhaust is high, vacuum advance is eliminated.

Installation of either kit usually results in a rise in exhaust temperature. Before proceeding, check to see that there is a minimum of ¾" clearance between the exhaust system and any point along the under-body and adjust as necessary. This will reduce the possibility of a fire, should the floor pan or fuel tank get excessively hot.

After the tuneup and installation of the kit, adjust the idle mixture to 14 to 1 air/fuel ratio, best accomplished by using a combustion analyzer. If your hobby shop doesn't have an analyzer, you can have this done at a garage or service station. Be sure the idle adjusting screws are sealed with sealer or heat-resistant tape afterward.

Remember, only pre-1968 vehicles will profit measurably from the installation. For those who have access to the Tech Library, the repair allowance criteria of TO 36A-1-70 can be used as a basis for determining the advisability of installing this type of kit.

LATE-MODEL CARS

The heated-air system, using a thermostatically controlled air cleaner, is used on all late-model cars. You can check the operation of this device by starting with the engine cold (below 85°F).

Note first whether the cold-air door in the snorkel is open or closed. It should be wide open. It should close when the engine starts. As the engine warms up, it should open again.

Checking the action of the thermostatically controlled air cleaner requires a temperature gage or thermometer, and you may also need a small mirror to see what the door in the snorkel is doing. Remove the air cleaner cover and install the gage as close to the sensor as is possible. Allow the engine to cool to below 85° and replace the air cleaner cover without the wing nut.

Start and idle the engine. When the damper begins to open, remove the air cleaner cover and note the temperature reading. It should be between 85° and 115°. If you can't see the damper, use a mirror. If the damper does not open as the engine warms up, check the vacuum motor and sensor.

While the engine is cool, the control damper should be in the compartment or cold-air delivery mode position. To determine if the vacuum motor is operating, apply at least 9 inches of vacuum to the fitting on the vacuum motor. The vacuum can be from the engine or from a vacuum source in the shop. With vacuum applied, the damper should move to the hot-air delivery position.

If the vacuum motor does not work satisfactorily, it should be replaced. This can be done by drilling out the spot welds and unhooking the linkage. The new motor can be installed with a retaining strap and sheet-metal screws.

If the vacuum motor is working properly, and the control damper is not, the sensor should be replaced. This is done by prying up the tabs on the retaining clips, installing the new sensor, and bending the tabs down to hold it in place.

Watch for more extracts from the Central Air Reserve Region's Information Letter in future issues of DRIVER, covering other control systems, anti-smog tuneup procedure, emission tester, and why the rotary engine is cleaner.

Interested military managers can contact Capt William M. Peoples, Chief, Transportation Div (TSLT), Directorate of Logistics, Hq Central Air Reserve Region (AFRES), Ellington AFB TX 77030. ●

See "Put Some Spring in Your Engine," and "Complete Ignition Tuneup," May and Aug '72 DRIVER.

***See "Backfire" letter, SSgt Paul (Disconnecting PCV valve no remedy for performance problems), and "Automotive Emission Control," Jan '72 and Jan '73 DRIVER.*

ABOUT MISS DRIVER,
(see Back Cover)

Vivacious, blonde, blue-eyed Karla Vieman is a student at Valley College in San Bernardino, California, where she is studying to become an airline stewardess (Aeronautics major). She told DRIVER she likes to travel anywhere and everywhere. Her chosen field should satisfy her wanderlust. Karla has been driving for 2 years, and said a recent sideswipe has made her more conscious than ever before of the demands of defensive driving. ●

(Reprinted from HIGHWAY USER, The Magazine of All Highway Transportation, Jan '73)

SEAT BELTS... older than you think

We tend to think that the general use of seat belts began about 10 years or so ago. And we would be right, generally speaking, for it was in the 1960s that safety people began to talk about seat belts and how they could save lives. But seat belts are a lot older than most readers of DRIVER magazine. In fact, they are at least 88 years old!

A U.S. patent for the "Safety Belt for Tourists and Others" was issued in 1885 to Edward J. Clayborn. The object of the belt was to keep passengers from falling out of vehicles . . . and considering the state of the roads back then, seat belts were probably a much-needed accessory for your Duryea Special.

By 1895, seat belts were gaining acceptance; for, with the rough roads and no springs, just staying in the seat was a major task. However, the need for his seat belt came a little late for one gentleman from New Jersey. On 9 July 1895, he became the first recorded automobile passenger fatality in the U.S. by falling out of a car.

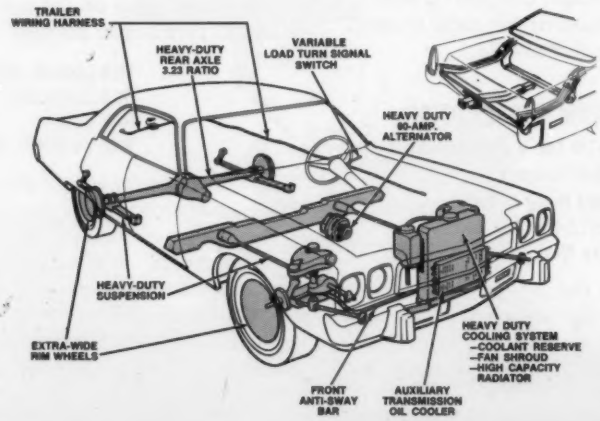
His unused seat belt was on the floor board. ●

MORE ON CAR/TRAILER RIGS

Last month, DRIVER urged travel trailer owners to avoid overstraining their cars' towing and load-bearing capabilities ("Rec Vehicles Are Fun!"). After the article went to press, we received the accompanying diagram showing a "one-stop shopping" package offered by one U.S. car maker for travel trailer owners in the market for a new car.

While this "package" doesn't illustrate the heavy-duty transmission and tires, adjustable air shocks, larger engine and brakes, and the grille bug screen mentioned in the previous article, it does highlight other important areas of concern for trailer pullers. The load equalizing trailer hitch shown in the upper right corner of the diagram is offered as a dealer-installed option.

Don't forget to include the gross vehicle weight (GVW) and the trailer tongue weight when computing your future car's capabilities. For example, a 4,000-pound vehicle with a 7,500-pound GVW can carry a 3,500-pound payload. Remember, too, that drawn weight is trailer weight *minus* tongue weight, the latter being 12- to 15% of total weight. ●


TRAILER WIRING HARNESS
HEAVY-DUTY REAR AXLE 3.23 RATIO
VARIABLE LOAD TURN SIGNAL SWITCH
HEAVY DUTY 90-AMP. ALTERNATOR
HEAVY-DUTY SUSPENSION
EXTRA-WIDE RIM WHEELS
HEAVY DUTY COOLING SYSTEM —COOLANT RESERVE —FAN SHROUD —HIGH CAPACITY RADIATOR
FRONT ANTI-SWAY BAR
AUXILIARY TRANSMISSION OIL COOLER

Answer to "WHAT SHOULD YOU DO?"

(See page 7 before reading)

You should turn in the direction of the skid, *if* you have the space to maneuver in; but your car's rear end is already swinging in that direction, and there's not much space between the vehicle and the guard rail. You'd probably drive straight into the rail, and away you'd go—over the hill. Your best answer in this case is B: Pump the brakes to increase rolling friction,* and steer down the road. You started to skid because you lost rolling friction between your tires and the road. You have to reestablish that rolling friction in order to recover from this situation, and the best way to do it is to pump your brakes. This will also slow the car enough to enable you to steer through the curve. If you jam on the brakes you will lock up all the wheels and be completely out of control. ●

**The adhesion force between your tires and the road surface.*

BACKFIRE

Address your letters to:
Editor
DRIVER Magazine
AFISC/SEDD
Norton AFB CA 92409

BICYCLE VISIBILITY

Please advise where I can get the bike pennants described in "Bicycle Survival," Oct '72 DRIVER, to use for our local bicycle safety program.

Lt Col Joseph A. Skiera
Chief, Safety Division
7206 Support Group
APO New York 09223

The bike pennants are made by JANCO Products, Div of JANCO Corp, Burbank CA 91503. Or, they could easily be made at home if suitably durable and flexible plastic rods are available. In either case, these bright pennants are a great boon for the safety of the bicyclist.

NO NEED TO 'BLOW IT'

"Don't Blow It on a Curve," in February DRIVER was great! The phenomenon of "outtracking" mentioned in that article is old hat to pilots. They realize that it is the bank that turns the plane, not the ailerons or rudder. In the same way, turning the handlebars of a motorcycle creates centrifugal force which causes the machine to bank in the opposite direction, thus initiating the turn. During the balance of the turn, the bars just control the angle of the bank.

Every rider should be experimentally aware of the physical processes of turning on a two-wheeled vehicle. Keep up the good work!

1st Lt John R. Albrektson
Box 3053 Cambria AFS
Cambria CA 93428

Thanks, Lieutenant, for giving us the excuse to publish the warning again: As DRIVER has explained before, the secret lies in practicing the art of first steering in the direction opposite your turn— in a fast, smooth, right-left or left-right movement.

DIAGNOSTIC TEST CENTERS

I would like to know the location of a diagnostic test center near Newport, such as the one in "Give Your Car a Clean Bill-of-Health," Dec '72 DRIVER.

PNC Charles L. Roper
COMCRUDESLANT Staff
Naval Base
Newport RI 02840

The Sun Electric Corp, Dept 199, Harlem-Avondale, Chicago IL 60631, supplies equipment for such centers. They may be able to help.

LONG-TERM SUBSCRIPTION

Inclosed is $10 for a 5-year subscription to your fine magazine.

CM2 David A. Beaudoin
CBT 0418, P.O. Box 9
Yap West Caroline Island 96943

Thanks for the 5-year subscription request and for the kind words. We forwarded it to Supt of Docs, GPO, Wash. DC 20402, per instructions on masthead page. However, they will refund $4.00, since only 1-, 2-, and 3-year subscriptions are processed. Many years of happy reading!

INERTIAL REEL BELTS

Yours is a fine magazine! I especially enjoyed "Experiment at Cape May," Feb '73, and its reference to the drivers being belted in tightly to stay at the controls. As an ancient carrier pilot, I say "Amen." But, how many cars have inertial reel belts which prevent this? Can I modify the inertial rig in my '72 Capri?

Capt J. R. Thomson (U.S. Navy)
Bureau of Naval Personnel
Washington DC 20370

Thanks for the kudos, Captain. Impact-locking inertial systems do prevent drivers from cinching in tightly, but most of the newer inertial systems lock the driver in tightly. Ford does not recommend modifying your Capri's inertial system. You can order a static belt system from a dealer, or you might get a belt-harness from a wrecked Capri. Early '72 model Capris did not have an inertial system, so these belts should adapt easily to your car. Be sure used belts are in good condition, and haven't been involved in a high-impact crash. A harness system such as used for NASCAR and USAC competition is available for around $50.

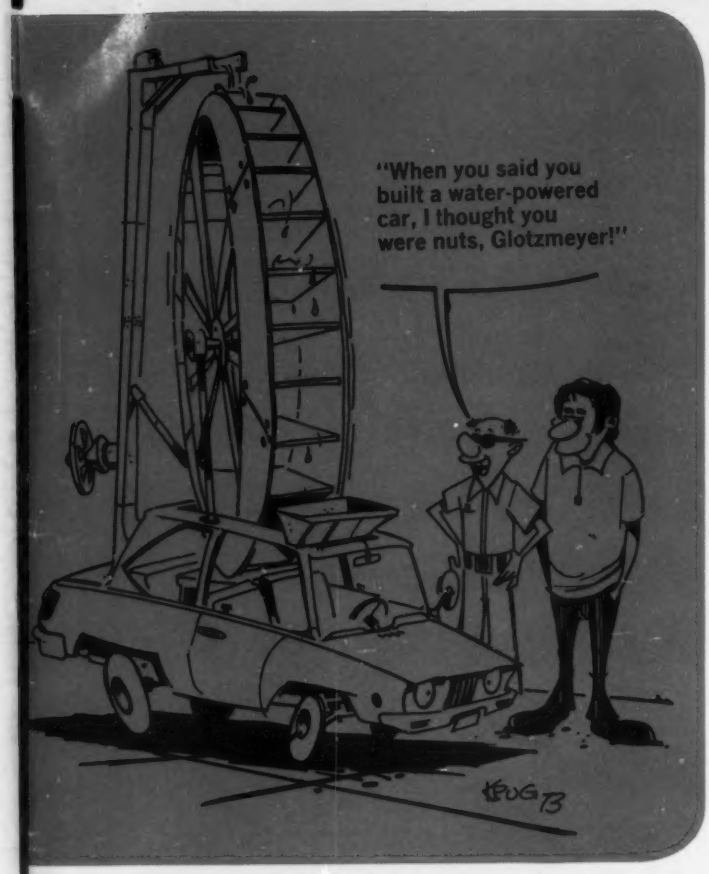
BAD OIL MIX

"How to Read an Oil Can," Jan '73 DRIVER, was very interesting, but did not mention what could happen if a motorist changes his oil from a non-detergent type to a detergent. Non-detergent oil allows carbon buildup in the engine. A detergent oil will loosen much of this buildup, and the carbon could plug oil passages and result in permanent damage to the engine.

YN3 Larry W. Doss
Attack Squadron 43
NAS Oceana
Virginia Beach VA 23460

That was a reprint of an Auto Club article explaining how to read the codes. We've published the oil-mix warning before, and have another complete lubrication feature coming up. But thanks, we're printing your warning in the interim for the newcomers.

☆U.S. GOVERNMENT PRINTING OFFICE: 1973—789-419/8



"You see, Farnbuckle, by filling the air bag system with helium, we save lives and clear away the wreckage simultaneously!"

Miss DRIVER

KARLA VIEMAN

"Hi, guys! I'll bet none of you fellows have a trailer like this! It's an antique two-wheel buggy, and even though I'm just having some fun with it, you can see that I've got a good grip on it. Which reminds me, fellows; a lot of you are going to be hitching up the family trailer, now that summer is almost here, to head for the beach and the boondocks, or elsewhere for recreation and relaxation. I wish you'd all make sure that you have a sturdy hitch on your car before you start out, and check it and the safety chains as well as the other connections, every time you make a rest stop along the way. Then you'll be sure everything is tagging along behind, just as it should, and you won't arrive at your favorite campground minus the essentials." ●

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